VII. — *Notes on* Cleridæ *and Descriptions of some new Genera and Species of this Family of Coleoptera.* By Charles J. Gahan, M.A., of the British Museum (Nat. Hist.).

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Having been occupied for some months past in arranging the Cleridæ in the collection of the British Museum, I had necessarily to make myself pretty well acquainted with the characters on which the classification of the family is based and on which the relationship between the different genera is determined. The work of arrangement might have been simplified had I been content to follow the order set out in the latest general work on the classification of the family. But this was not to be. My work was not long in progress before I became dissatisfied with the order and arrangement of the genera adopted by my friend Herr Schenkling in the 'Genera Insectorum,' partly because I found a certain number of undoubted errors left uncorrected, and chiefly because the order of the genera did not seem to me in many cases to be in accordance with natural affinities.

Instead, therefore, of following his arrangement, I have endeavoured to place the genera in our collection in what appeared to me to be the most natural order; and the study which this entailed has enabled me to offer the following notes, criticisms, and suggestions for the consideration of other workers on the family. In one or two points they will be found to have more general bearing on the classification of the Coleoptera.

Types of Cleridæ *in the Collection of the British Museum.*

Herr Sigmund Schenkling has been good enough to describe several new species, the types of which are now in the British Museum; and it is due to him that I should express here my great indebtedness for the kind help he has given in identifying the greater part of the unnamed material sent to him for examination. These identifications, coming from so well-acknowledged an authority on the Cleridæ, have been of the greatest value to me, and have made my work much easier than it would otherwise have been.

The Museum is fortunate also in possessing now a large number of the *types* described by the Rev. H. S. Gorham. These came to it chiefly in the splendid collections from Central America presented by Dr. F. D. Godman and the late

Mr. Osbert Salvin, and in the almost equally valuable collection bequeathed to the Museum by the late Mr. Alexander Fry. A few of his types also were found in the Pascoe collection; and types or cotypes of species described by him are included in the valuable sets of Coleoptera, chiefly from Rhodesia and Natal, presented at different times by Mr. Guy Marshall.

Incorporated in the general collection of Cleridæ, there are to be found also *types* of species described by Newman, Adam White, Westwood (one or two), Andrew Murray (one), Chevrolat (a few Mexican types), G. Waterhouse, C. O. Waterhouse, Pascoe, and D. Sharp; while kept apart in separate cabinets are the types described by Wollaston, and those few from the Banks collection described by Fabricius.

The Classification of the Cleridæ.

Lacordaire, in his 'Genera des Coléoptères,' divided the Cleridæ into two main sections or tribes characterized as follows:—

1. Cinq articles aux tarses; pronotum confondu avec les parapleures du prothorax ..... *Clérides* vrais.
2. Quatre articles aux tarses; pronotum distinct des parapleures du prothorax..... *Enopliides.*

The distinction thus drawn between the two tribes or subfamilies, though real, is not quite accurately stated and requires some explanation.

In all Cleridæ, with scarcely an exception, the tarsi are 5-jointed; but in many genera, and not alone those belonging to one subfamily, the first joint is very much reduced in size, even in some cases almost to the point of disappearance. It usually lies below the basal part of the second and cannot be seen when the tarsus is looked at from above. This apparently tetramerous condition is, however, not the one to which Lacordaire refers in the diagnosis given above. In the true Cleridæ, or those belonging to the subfamily Clerinæ, the fourth tarsal joint is normally developed, generally as large as the third, and, like it, furnished with a membranous lobe beneath; but in the Enopliides (or, as we should now call them, the Corynetinæ) the fourth joint is very small and inconspicuous, having almost the same relation to the other joints as it has in the so-called tetramerous Coleoptera. So small, as a rule, is this joint, that in many cases it has been entirely lost sight of, with the consequence that not a few genera of Cleridæ have been placed in the wrong subfamily.

Lacordaire's whole "groupe" Phyllobænides, for example, and other genera to which I shall have to direct attention are in this case.

With regard to the second of Lacordaire's distinctions between the Clerinæ and the Corynetinæ, this, more accurately stated, should be, that in the Clerinæ there is no lateral margin or carina on the prothorax, whereas in the Corynetinæ the prothorax almost invariably has either a lateral margin or carina, or at least shows some traces of it.

In no Cleridæ, and in no other beetles of the suborder Polyphaga with some few doubtful exceptions, have I ever seen any traces of the primitive sutures that separate the pronotum from the pleuræ of the prothorax. The presence of such sutures seems to be confined to the Adephaga, and constitutes, in my opinion, one of the most distinctive characters of that suborder; and here I may state that since I find these sutures present and very well marked in *Omma* and *Tetraphalerus*, two genera of Cupedidæ, I consider that much-debated family to be rightly placed in the suborder Adephaga.

Coleopterologists, myself included, very often in their descriptive writings refer to the lateral margin of the prothorax, when present, as marking the boundary line between the pronotum and the pleuræ. But there is no real justification for this practice. The lateral margin may, and in many cases probably does, coincide with the primitive dividing-line; but in the Polyphaga there is no means of telling, since the sutures have in nearly every case disappeared. If, however, we turn to the Adephaga, we find there that the sutures are generally placed at some distance below the lateral edge, and that the pronotum itself forms no inconsiderable part of the flanks of the prothorax, that part to which Leconte and Horn have given the name of *epipleura*. In the Cupedidæ the relative proportions of the pleuræ and the *epipleura* vary a good deal. The pleuræ in the two genera mentioned above are wide and form a good part of the sides of the prothorax, but in the genus *Cupes* itself they seem to be restricted to very narrow limits.

This leads to a question which has a direct bearing upon the classification of the Cleridæ. Is the presence or not of a lateral margin on the prothorax a matter of primary importance?

In some recently published systems of the classification of the Coleoptera, I find the Cleridæ of Lacordaire no longer maintained, but split up into two distinct families, the Cleridæ and the Corynetidæ. Since no details as to the

exact limits of the two families are given, I can only conjecture that this new view is the outcome of my friend Prof. Lameere's remarks concerning the Cleridæ in his 'Notes pour la Classification des Coléoptères,' published in 1900. "It is in effect quite impossible," he says, "to maintain the family Cleridæ as it is generally adopted at the present day." "The Corynetinæ having retained the lateral margin of the prothorax cannot be descended from the Clerinæ, which have lost it; on the other hand, the latter cannot be derived from the Corynetinæ, since they still possess a well-developed fourth joint in the tarsi." "It is manifest," he continues, "that the Clerinæ are descended from Melyridæ, and equally manifest that the Corynetinæ are also descended from Melyridæ, but from different Melyridæ though near akin to the ancestors of the Clerinæ."

I am not convinced by this argument. For while I admit it to be highly improbable (and not merely on the grounds stated by Prof. Lameere) that the Clerinæ are derived from the Corynetinæ, I see no reason why the latter may not be derived from the former. The lateral margin of the prothorax, even supposing it not to have been present in the predecessors of existing Clerinæ, may quite conceivably have arisen as a secondary development. It is often very much more fully developed in some of the later and more specialized groups of a family than it is in the more primitive ones. Compare, for example, the Cassidinæ with the Criocerinæ in the family Chrysomelidæ. There appears to me to be, on the whole, a much closer relationship between the Clerinæ and the Corynetinæ than there is between either and the Melyridæ; and this would hardly be the case if they were derived from different Melyrid ancestors, though possibly it might be explained on the theory of convergence of characters.

More plausible to me seems Prof. Lameere's further suggestion that all three—the Clerinæ, Corynetinæ, and Melyridæ—should constitute a single family. The characters that separate the Cleridæ from some at least of the Melyridæ are very slight, although perhaps not more slight than those which distinguish the Melyridæ from some of the Malacodermata. But I am afraid that Lameere's suggestion, if followed to its logical conclusion, might lead us too far, and so I prefer to regard the Cleridæ as a separate family constituted very much as it was left by Lacordaire, but with the exclusion of a few genera admitted by him, and the addition of a great number of genera described since his time.

The characters on which Lacordaire relied for the sub-

division of his Tribes into lesser groups seem to be amongst the best that could have been selected, and have since been made use of by Leconte and Horn in their 'Classification,' and more recently by Herr Schenkling in his work on the Cleridæ in Wytsman's 'Genera Insectorum.'

Some of Lacordaire's mistakes, resulting chiefly from inaccuracy of observation and not from any fault in his system, have been repeated in both of these works. These I shall have to point out, as well as other errors that have come under my notice; and I propose also to make some suggestions that will, I hope, lead to a more natural arrangement of the genera, especially in the group *Clerini*.

The subfamily Clerinæ was split up by Lacordaire into four groups: the Tillini, Clerini, Phyllobænini, and Hydnoecrini. In the last three groups the first joint of the tarsi is supposed to be covered over by the second. But in the three genera *Phyllobænus*, Spin., *Epiphlœus*, Spin., and *Plocamocera*, Spin., forming his group Phyllobænini, the first joint of the tarsi is quite distinct, being nearly or quite as long as the second joint, while the fourth joint is very small. In these genera also the prothorax usually has a more or less distinct margin or carina on each side. The group should therefore be placed in the subfamily Corynetinæ. The peculiar character of this group—the emargination of the eyes placed on the inner side instead of in front—is to be met with again in certain genera now placed in the group Enopliini, so that the group Phyllobænini can no longer be maintained as a distinct one. The genus *Ellipotoma*, Spin., which is at present placed in the group Hydnocerini, must on the same grounds be removed to the group Enopliini of the subfamily Corynetinæ. The above-mentioned facts, so far as the genus *Phyllobænus* is concerned, have already, I find, been pointed out by Leconte and Horn ('Classification of the Coleoptera of North America'); but their observations on the matter have evidently escaped the notice of Mr. Gorham, Herr Schenkling, and other writers on the Cleridæ.

The following four genera also, now placed in the Clerinæ, must, on account of the small size of the 4th tarsal joint and other characters, be removed to the subfamily Corynetinæ:—

1. *Tarsostenus*, Spin.—The description Lacordaire has given of the tarsi in this genus is altogether inaccurate, as I have discovered from my own observations. His mistake, however, had already been found out long ago by Jacquelin

du Val, who, in the 'Genera des Coléoptères d'Europe,' has given a correct description and figure of the tarsi in *Tarsostenus*, and proposed that this genus, having no lateral carina to the prothorax, should constitute a new group intermediate between the Clerinæ and the Enopliinæ. It is remarkable that this correction and this new view in regard to the position of *Tarsostenus* should have escaped the notice of almost every subsequent worker on the Cleridæ. Reitter, so far as I can find, is the only one of them who seemed to be acquainted with the true structure of the tarsi in *Tarsostenus*. But he has placed the genus in the group Tillini. There is, however, in my mind no doubt that the true place for *Tarsostenus* is the subfamily Corynetinæ, where it has a very close ally in the genus *Paratillus*, Gorh. If a sufficient number of specimens of *T. univittatus*, Rossi, be carefully examined, there will be seen in most of them a rather smooth shining space, near the base, on each side of the prothorax, and, limiting this space above, a short carina. In *Paratillus* the structure is practically the same, the carina being only a little more distinct.

2. *Tarsostenodes*, Blackb., has the tarsal structure of the Corynetinæ, and, although possessing scarcely a trace of a lateral carina on the prothorax, must also, I think, on general grounds be placed in the Corynetinæ.

3. *Thanasimorpha*, Blackb.—In this genus the prothorax has a short lateral carina as in *Paratillus*, and the genus seems best placed between *Paratillus* and *Thriocera*.

4. *Mathesis*, Waterh.—This genus is so closely related to *Phymatophæa*, Pasc., that it can hardly be maintained as distinct. The type species, *M. quadriguttata*, Waterh., has, in fact, been subsequently described by Sharp as a species of *Phymatophæa*, viz. *P. hilaris*, Sharp; and a second very nearly allied species, *P. violacea*, Broun (nec Fab.), has also been referred to *Phymatophæa*.

Subfamily *Clerinæ*.

The Group Tillini.—The distinctive character of this group rests upon the fact that the first joint of the tarsi is normally placed, so that all five joints are distinctly visible from above. In nearly all the genera of this group the acetabula of the front coxæ are closed behind, the closure being effected chiefly by the prolongation inwards of the epimeral lobes of the prothorax. These lobes meet or almost meet together in the middle line. But in *Callimerus*, Gorh., one

of the genera referred to the group, the acetabula of the front coxæ are more widely open behind than in any other genus of Cleridæ, the epimera not being in the least produced behind the coxæ. *Callimerus* differs also from other Tillini in the form and structure of the eyes and antennæ, these being more suggestive of what obtains in the Hydnocerini. I think, therefore, that, notwithstanding the length and distinctiveness of the first tarsal joint, the genus has no close natural affinity with the Tillini, and should be regarded as the type of a separate group.

Gastrocentrum, Gorham.—To this genus the *Notoxus unicolor* of White belongs, the latter species being identical with *G. pauper*, Gorh., the type of the genus.

The *Tillus dux* of Westwood should also, I think, be referred to *Gastrocentrum*. It is in form and general structure very like *G. unicolor*, White, and agrees with it in having the basal tooth of the tarsal claws very small and obtuse, not sharp and distinct as it is in the genus *Tillus*.

Cylidroctenus, Schklg.—Herr Schenkling, who first characterized this genus, has placed it in the group Clerini immediately after *Tillicera*, Spin. He was wrong, however, in stating that it has the same kind of tarsi as *Tillicera*. The first joint of the tarsi is quite distinctly visible from above, especially in the hind tarsi, where it is quite as long as the second joint. The claws, moreover, are not simply appendiculate at the base as in *Tillicera*, but furnished with two teeth, a stout one near the base and a more slender one towards the apex, the kind of structure met with in *Tillus* and other genera of Tillini. The condition of the gula is also very much the same as in *Tillus*, so that I believe *Cylidroctenus* to be on the whole very nearly allied to *Tillus*; it ought certainly to be placed in the same group.

Strotocerus, Schklg. (1902), seems to be hardly distinct from *Diplophorus*, Fairm. (1887).

The Group Clerini.—In deciding upon the affinities of genera within this group certain characters, such, for example, as the structure of the antennæ, seem to me to have been taken too much into account, while others have been almost or quite neglected. I find that Lacordaire, Leconte and Horn, and Schenkling seldom or never mention the condition of the front coxal cavities, whether closed or open behind, in the genera they have characterized. And yet this condition has been made to play an important part in the classification of many other families of beetles. Leconte and Horn do, in fact, state in their definition of the

family, that the coxal cavities of the front legs are open; but this only shows that they had neglected to observe the condition in a great many of the genera.

Another character not yet made use of in the classification of the Cleridæ, but which will probably yield some interesting results, is that which may be drawn from the variations in the form &c. of the gular area on the head. The gular sutures in some cases diverge posteriorly, so that the gula is distinctly broader behind. In *Tillus* and many other genera the gula is posteriorly divided off from the sides of the head by a more or less narrow slit on each side, and is continued back as a sort of free plate—a most unusual condition in Coleoptera. A further modification of the gula, characteristic of *Clerus* and those genera which, on other grounds, I consider to be most nearly related to *Clerus*, arises from the convergence of the sutures posteriorly, so that the gula becomes very narrow at its hinder end. Taking this character among others into consideration, I believe that the following genera constitute a natural subgroup within the group:—*Colyphus*, *Cleronomus*, *Systenoderes*, *Pœcilochroa*, *Blaxima*, *Enoclerus* (= *Clerus* of Schenkling), *Sallæa*, *Thanasimus*, *Tillicera*, *Clerus*, Fab., *Stigmatium*, *Operculiphorus*, *Dasyceroclerus*, *Rhytidoclerus*, *Xestonotus*, *Cyclotomocerus*, *Phæocyclotomus*, *Cardiostichus*, *Hemitrachys*, *Omadius*, and *Corynommadius*. Some of these genera are widely separated in Lacordaire's arrangement; and the same is true, but to an even greater extent, of the arrangement followed by Herr Schenkling. This subgroup (in which the eyes are finely facetted and distinctly emarginate, the acetabula of the front legs open behind, the tarsal claws appendiculate at the base, and the last joint of the labial palpi alone triangular) might come in the second place, the first subgroup being constituted, as by Lacordaire, of those genera in which the eyes are coarsely facetted, namely, *Axina*, *Priocera*, *Phlœocopus*, *Notoxus* (= *Opilo*), *Thanasimodes*, *Natalis*, *Cormodes*, *Gyponyx*, *Xenorthrius*, *Orthrius*, *Aphelochroa*, and (?) *Erymanthus*. In the last genus the eyes are less coarse than in the others; but yet not so fine as in any of the genera of the remaining subgroups, excepting perhaps *Thaneroclerus*, a genus to which I must again refer. In these genera of the first subgroup the eyes are as a rule feebly emarginate, sometimes almost entire; the gular sutures diverge posteriorly; the acetabula of the front coxæ are sometimes open, sometimes closed behind (in the latter case the prosternum is usually expanded behind

the coxæ) ; the tarsal claws usually simple, sometimes with a very small, generally obtuse, tooth at the base.

Although giving as the chief character of the group Clerini "eyes emarginate in front," Lacordaire included in the group one or two genera in which the eyes are almost, if not quite, entire. Other genera in which the condition is the same have since been added. *Thaneroclerus*, Lefebv., and its near ally *Neoclerus*, Lewis, are, from a systematic point of view, difficult to deal with, as they present exceptional characters : the first tarsal joint has almost disappeared, the next three joints are very short, and, except on the front tarsi, scarcely lobed beneath, and the claw-joint is long. In *T. buqueti*, Lefebv., the type of *Thaneroclerus*, the eyes, almost entire, are rather small and round, and coarsely facetted; the prothorax has on each side a distinct line or carina ; the acetabula of the front coxæ are closed behind. *T. sanguineus*, Say, differs from it in having the eyes rather finely facetted, the acetabula open behind, and the prothorax without a trace of a lateral carina. The presence in *T. buqueti* of the lateral carina, of which a trace also appears in *Neoclerus*, suggests that these two genera should go in the subfamily Corynetinæ ; but, on the other hand, the fourth tarsal joint is almost as well developed as the third. Until I can work out their affinities with more certainty, I must leave them as a separate subgroup in the Clerini. *Lyctosoma*, Lewis, which I do not know, will probably go with them.

Graptoclerus, *Blæsiophthalmus*, *Allonyx*, and *Anthicoclerus*, though having the eyes entire or very nearly so, seem not out of place in the group Clerini and would form a small subgroup leading towards the next, in which the eyes are more or less distinctly emarginate, the gular sutures straight or divergent behind, the acetabula of the front coxæ generally open, the last joint of both labial and maxillary palpi triangular (with a few exceptions), the tarsal claws simple as a rule or having only a feeble tooth at the base. In the latter subgroup I should place the following genera :— *Platyclerus*, *Lissaulicus*, *Balcus*, *Aulicus*, *Phlogistus*, *Trogodendron*, *Olesterus*, *Scrobiger*, *Eburiphora*, *Zenithicola*, *Dieropsis*, *Trichodes*, and *Eleale*. In three of these genera, viz. *Platyclerus*, *Lissaulicus*, and *Eburiphora*, the acetabula of the front coxæ are closed behind, the prosternum being broad between the coxæ, and widely curved out on each side behind. These three genera occur in Madagascar, the rest, in which the acetabula are open behind, are, with the

exception of the American *Aulicus*, the African *Dieropsis*, and the Mediterranean *Trichodes*, peculiar to Australia and New Zealand, one genus only (*Balcus*) occurring in the latter country. *Cleropiestus*, Fairm., another genus from Madagascar, which Schenkling places in the group Hydnoceri, would, I think, go better in the present group near one of the three genera just mentioned. In the form of the prosternum, as well as in its wing-venation, it agrees closely with *Eburiphora*, whereas, except for its somewhat prominent eyes, it has little resemblance in form or structure to any of the Hydnocerini.

Calendyma, Lac., and *Epiclines*, Chev., the two remaining genera of those included by Lacordaire in the group Clerini, differ in some important respects from the other members of the group. The first joint of the tarsi is in both quite distinct, especially in the hind tarsi, where it is almost or quite as long as the second joint, and equally visible from above. If this character were alone to be considered, they ought to be included in the group Tillini; but Lacordaire probably preferred to risk destroying the accuracy and value of his synoptic tables rather than to violate natural affinities. For these two genera do seem on the whole much more nearly allied to certain genera of the present group than to any genus of Tillini; but they should, in my opinion, be placed as a distinct subgroup characterized as follows:— Five distinct joints to the tarsi, the first joint in the hind tarsi nearly or quite as long as the second; head rather narrow, prolonged anteriorly; eyes finely facetted, emarginate in front; front coxæ transverse with distinct trochantins, their acetabula widely open behind, the prosternum very narrow between the coxæ and not prolonged behind; last joint of labial palpi triangular, of maxillary subcylindrical, maxillary lobe long; tarsal claws simple or with only a feeble obtuse swelling at base. From this subgroup the numerous species constituting the genus *Eurycranus*, Blanch., must, however, be excluded. For some strange reason, Lacordaire and since both Gorham and Schenkling have regarded this genus as a synonym of *Epiclines*, Chev.; but it is altogether distinct, the only point in common being that the species are mostly Chilian. In *Eurycranus* the head is short, widened above, with the eyes prominent and almost entire, not at all like the head of *Epiclines*; the first tarsal joint is quite small and hidden below the second joint; and the rest of the characters are such that, except for a slight difference in the structure of the antennal club, there is no reason why this genus should not go in the group Hydnocerini, and there I propose to place it.

The Group Hydnocerini.—With the exclusion of *Ellipotoma*, Spin., which belongs to the next subfamily, and *Cleropiestus*, Fairm., which I have suggested should go in the group Clerini, the present group would now be composed of the following genera: *Eurycranus*, Blanch., *Hydnocera*, Newm., *Isolemidia*, Gorham, *Lemidia*, Spin., *Parmius*, Sharp, *Neohydnus*, Gorham, *Cephaloclerus*, Kuw., and *Allelidea*, Waterh., with perhaps *Evenus*, Cast, *Abrosius*, Fairm., *Emmepus*, Motsch., and *Theano*, Cast., genera which are at present unknown to me. *Paupris*, Sharp, which is included in the group by Schenkling, is somewhat doubtfully to be placed there, owing to the coarse facetting of the eyes. But I do not at present know of a better place for this genus.

The genus *Thanasimodes*, Murray, which I have placed next *Notoxus*, Fab. (in the group Clerini), differs from the latter only in having the acetabula of the front coxæ completely closed in behind. The type, *T. metallicus*, Murray, a species from Old Calabar, is, I feel sure, identical with one from the same locality described later by Chevrolat, viz. *Opilo chloropterus*. *Opilo cyaneopurpureus*, Fairm., is closely allied to it, and there are other African species, including *dorsalis*, Lucas, *gigas*, Cast., and *nigerrimus*, Kraatz, now placed in *Opilo*, which agree with *T. metallicus* in having the front coxal cavities closed in behind, and would therefore be better placed in *Thanasimodes*.

It will be seen that I have substituted the name *Notoxus*, Fab., for *Opilo*, Latr.; and some explanation for this is necessary, and the reason also why I have proposed the new name *Enoclerus* for the genus characterized by Schenkling under the name of *Clerus* ('Genera Insectorum,' Cleridæ, p. 48, 1903).

On the Application of certain Generic Names.

The name *Clerus* was first proposed as a generic name by Geoffroy, but since Geoffroy did not in his first work make use of the binomial nomenclature he is no longer recognized as the author of this and of several other names that he was the first to employ. It appears that Fabricius was the first author who at the same time characterized the genus *Clerus* and made use of the binomial system, and he is therefore admitted to be the author of the genus *Clerus*. The species included by him in the genus at its first publication, Syst. Ent. p. 157 (1775), were in order as follows: *mutillarius*, Fab., *formicarius*, Linn., *sipylus*, Linn., and *apiarus*, Linn.

In an appendix appearing at the end of the same volume he added to the genus another species—*sexguttatus*, Fab. These species are not all congeneric, and the question has arisen, which species is to be regarded as the type of the genus? In one of his papers, Mr. Gorham has rashly stated that Fabricius clearly indicated *formicarius* as the type. He did nothing of the kind. If there is any indication by Fabricius of the type, that type must be *mutillarius*; for in a later work—Syst. Eleuth. i. p. 279 (1801)—we find this species followed by a description of the generic characters, and it seems to have been a practice with Fabricius in some of his works to add the generic characters immediately after the species from which they were chiefly drawn. But the case for *mutillarius* does not stop here. Two of the original four species, the two last, were in the Syst. Eleuth. removed by Fabricius to the genus *Trichodes*. Of the four, there remained now only the two first. *Clerus formicarius* became subsequently the type of Latreille's genus *Thanasimus*, and then only *mutillarius* was left. Nearly half a century later *mutillarius* was made the type of another name—*Pseudoclerops*, Jacq. du Val. It is Herr Schenkling's contention that as all these four species have gone from the genus, we must now take the species of the supplement as the type. With this I cannot agree, for the simple reason that it is absurd to take as the type of a genus a species that was apparently unknown to the author at the time when he first described the genus. And so I am forced to maintain that *Clerus mutillarius*, Fab., is the type of the Fabrician genus *Clerus*.

Notoxus is another of those names first proposed by Geoffroy, but in which all the rights of priority have passed over to Fabricius. At present, the name is used for a genus of Heteromera, and it was obviously invented to express a character of that genus; but for a very long time it was applied to a genus of Cleridæ; and now, so far as I can see, we shall have to use it in that sense again, to take the place of *Opilo*, Latr. Fabricius (Syst. Ent. p. 158) applied the name first to two species—*mollis*, Linn., and *monoceros*, Linn. Later (Syst. Eleuth.), he placed *monoceros* in the genus *Anthicus*, while under *Notoxus* he has ranged the following species, all Cleridæ: *porcatus*, Fab., *violaceus*, Fab., *mollis*, Linn., *indicus*, Fab., and *chinensis*, Fab. Unless it can be shown that some other author had in the meantime used *Notoxus* in a different sense, it seems clear that we must take *mollis*, Linn., to be the type of that genus.

Subfamily *Corynetinæ*.

The principal character of this subfamily is the great reduction in size of the fourth joint of the tarsi; this joint is never lobed beneath and is usually so small as to be barely visible between the lobes of the third joint. The first joint undergoes the same modifications as in the first subfamily, being sometimes long and distinctly visible from above, while in other cases it is quite small and almost wholly hidden below the base of the second joint, the tarsi in such cases appearing to be three-jointed. With very few exceptions the prothorax is marginate or carinate at the sides in the genera of this subfamily.

Two groups, the Enopliini and the Corynetini, have been distinguished by Lacordaire, based upon differences in the form of the antennæ. Herr Reitter in adopting the same groups ('Bestimmungs-Tabelle der Cleriden') distinguishes them chiefly by the number of visible sternites in the abdomen, the Enopliini having six and the Corynetinæ only five sternites visible.

It is not clear from the arrangement in his recently published 'Catalogue of the European Coleoptera,' whether Herr Reitter regards the Corynetinæ as a family or as a subfamily; but it is quite evident that he considers the number of visible sternites in the abdomen to be a matter of primary importance, since he there includes in the Corynetinæ only such genera as were previously placed in his second group. If the additional sternite were at the base of the abdomen, there might be some slight justification for this view. But it is not. The sixth sternite, when visible, is at the apex, a condition which crops up in isolated genera or groups in various families of beetles. Even in the Cleridæ the character would be very difficult of application, for there are many genera of true Clerinæ in which there is so little of the sixth sternite visible that one would be justified in describing them as having only five visible sternites to the abdomen.

Although I consider the characters on which Lacordaire based his two groups to be unimportant, I cannot at present suggest any better arrangement. The introduction, however, of the Phyllobænini into this subfamily will necessitate some slight rearrangement of the genera. The genus *Pelonium*, Spin., requires to be split up, containing as it does at the present time species with finely facetted eyes and coarsely facetted eyes, with simple tarsal claws and with

appendiculate tarsal claws, differences accompanied by a marked difference in the general facies of the insects, and which to my mind are of more importance than the number of joints in the antennæ, whether 10 or 11, the character recently used by Herr Schenkling for dividing the genus into two sections.

It is a remarkable fact that, although this character—the number of joints in the antennæ—is largely used as a distinction between various other genera in the same group, I have more often than not found the number to be inaccurately stated. Thus Lacordaire, criticising the statements of his predecessors in reference to *Ichnea*, Cast., proceeds to say that in all the species of *Ichnea*, without exception, he had counted 11 joints in the antennæ. Gorham, in dealing with the Central-American species of the same genus ('Biologia Centrali-Americana,' Coleopt. iii. 2, p. 178), divided them into two sections with these characters :—*a*. Antennæ distinctly 11-jointed; *b*. Antennæ apparently 10-jointed. I have looked at the antennæ in all of these Central-American species with great care, both with a good lens and under the microscope, and in no species of the first section could I find more than ten joints, while in all the species of the second section there are evidently only ten joints, but the ten are all quite distinct, much more so than in the species of the first section. The sections are, nevertheless, natural ones, because the joints composing the funiculus of the antennæ are, in the first section, transverse, with the 5th and 7th joints small, whereas the joints of the funiculus are all subcylindrical in the species of the second section. I have further examined all other species of *Ichnea* accessible to me, including the genus type, and, except in two, could make out only ten joints in the antennæ: *I. batesiana*, Gorham, and *I. pelonioides*, Gorham (the second not more than a variety of the first), have eleven joints; but these two species must have been quite unknown to Lacordaire when he made the statement referred to above.

The Group Enopliini.—There is hardly any group of insects of the same limited extent in which the phenomenon of mimicry is better displayed than it is by the beetles of this small group. Within its limits are comprised the exact counterparts of various other Coleoptera, belonging chiefly to the families Lycidæ, Lampyridæ, Telephoridæ, Cistelidæ, Chrysomelinæ, Galerucinæ, and Coccinellidæ. But, however attractive this may be to the student of mimicry, it becomes somewhat of a nuisance to the systematist, since it tends to create a difficulty in classification by obscuring the natural

relationship existing between the different forms. The really good systematist, such as Lacordaire, could, of course, see beneath all these disguises; but that this has not been done in every case will, I think, be shown by the remarkable opinion expressed by that experienced entomologist Count Castelnau when writing upon Cleridæ of this particular group, led to it by a consideration of such resemblances as I have mentioned: "En tout il me semble probable que lorsqu'on abandonnera enfin le système tarsaire pour se rapprocher d'une classification naturelle, les insectes dont nous nous occupons ici seront partagés en groupes qui se placeront très loin les uns des autres." The tarsal system has been to a considerable extent abandoned, but the mimetic Cleridæ are still retained in the same old group, and are not to be found placed in the Heteromera, Malacodermata, Phytophaga, and other such groups, as Castelnau suggested they should be. Were he alive now he would doubtless be astonished to find many of them placed all in one single genus.

In his arrangement of the genera of this group Herr Schenkling places first *Allochotes*, Westw., and almost immediately after it the genus *Tenerus*, Casteln.; and in this I think he is, on morphological grounds, quite justified. But at first sight the two genera seem utterly remote from one another—the one composed of short, ovate, convex forms coloured exactly like Coccinellidæ and Chrysomelidæ; the other made up of elongate species suggestive in some cases of Telephoridæ and Lycidæ. In the first genus the antennæ are rather short and gradually clavate towards the apex, in the other longer and strongly serrate or subpectinate; but apart from the general difference in form, this is about the only well-marked difference in structure between the two. The gular area on the underside of the head is exceptionally short in the genus *Tenerus*, and becomes narrower behind, as in the genus *Clerus*; the same part is a good deal longer in *Allochotes*, but, as in *Tenerus*, the gular sutures converge behind.

Orthopleuroides, Kuw., and *Orthopleura*, Spin., are the only other described genera of the present subfamily in which I have noticed a similar form of gula. In other respects also these genera agree very well with *Tenerus*, though having a different form of antennæ and a slightly different structure of the tarsi. Instead of being placed, as at present, at the end of the Enopliini, they would come better, I think, soon after *Tenerus*.

Teneroides (Gorham, MS.), subgen. nov.

Under this name I have found in the Fry Collection a

species having characters like those of *Tenerus*, Cast., but differing in the fact that the third joint of the antennæ is dilated and resembles the fourth in form and size, and, further, that the hind femora in the male are strongly thickened and subfusiform. It appears to be undescribed.

Teneroides tavoyanus (Gorh. MS.), sp. n.

Rather elongate and narrow; fulvous-yellow or fulvous in colour, with the antennæ entirely black, the tibiæ, tarsi, and the apex of the femora piceous. Prothorax sparsely pubescent, subnitid, marked with a shallow, sinuately transverse impression near the apex, and having a small feeble tubercle before the middle of the base; elytra pubescent, each with three or four feeble costæ, the intervals between which are somewhat sulcate. In the female, the meso- and metathorax and the sides of the prothorax are very dark, nearly black. The antennæ are slightly longer in the male than in the female, and more strongly serrate.

Length, ♂ 5⅓, ♀ 7 mm.; breadth 1½ and 2 mm.

Hab. Tavoy in Tenasserim (*W. Doherty*).

The species described by me as *Tenerus sulcipennis* (P. Z. S. 1902, ii. p. 279) will have to go into this subgenus, but not knowing the male, I cannot say whether the hind femora are in this sex thickened or not.

In another very closely allied species, also belonging to this subgenus, and which I have determined from description to be *Tenerus subsimilis*, Schklg., the hind femora of the male are very strongly thickened.

One or two other species, apparently undescribed, which I found amongst the Lycidæ in the Fry Collection, labelled by Mr. Gorham *Calochromus* sp., belong also to the subgenus *Teneroides*.

Teneromimus, gen. nov.

This genus is formed for two species which have completely the aspect of *Tenerus*, and agree with that genus in most of its characters; the head is similar in structure, and the gular area just as much reduced in size; the first joint of the tarsi is visible from above, and the tarsal claws are distinctly appendiculate at the base; the prothorax is somewhat parallel-sided, distinctly marginate on each side from the base up to the middle, and then less distinctly so in front; the pronotum is evenly and not strongly convex; the elytra are gradually but slightly widened behind, and are rounded at the apex, they are only slightly convex above. The antennæ are, however, 10-jointed, and quite different in form

from those of *Tenerus*; the last three joints are expanded and elongated, forming a flattened serrate club, which is more than three times as long as the rest of the antennæ, the intermediate joints, constituting the funiculus, are very short; some of them are difficult to distinguish in the first of the two species.

Teneromimus vitticollis, sp. n.

Pronotum, except along each side and a band along the middle, ochreous red; elytra entirely ochreous red; all the rest of the body, including the appendages, quite black. Upper surface, except on the black parts, covered with a rather dense reddish pubescence; head and prothorax minutely and very densely punctulate; elytra appearing to be impunctate, feebly convex, and along the disk, especially posteriorly, nearly flat, each with a few very faint costæ; ventral surface nitid, sparsely furnished with hairs.

Length 7 mm.; breadth 2 mm.

Hab. Melbourne in Australia. One example only in the British Museum.

Teneromimus humeralis, sp. n.

Head, prothorax, and elytra reddish testaceous, the latter moderately convex, long, widening posteriorly, blackish at the apex, each also with a distinct black, nitid spot extending back a little way from the shoulder; meso- and metathorax, abdomen, legs, and antennæ black. Upper surface not very densely pubescent; head very finely and densely punctulate, the prothorax still more minutely but somewhat less acutely punctulate.

Length 8½ mm.; breadth at base of elytra 2 mm., at two-thirds of their length from the base 3 mm.

Hab. Alu Island, Solomon Archipelago (*C. M. Woodford*).

The single example of this species was sent among the unnamed *Teneri* to Herr Schenkling, and was returned labelled *Tenerus* n. sp. He must have overlooked the structure of the antennæ.

Epiphlœus, Spin.

This genus, rid of some of its species, would be a very well marked one, the situation or emargination of the eyes being very distinct and placed on the inner side at a good distance above the point of insertion of the antennæ. The antennæ are correctly described by Herr Schenkling as having 11 joints, but he has included in the genus a certain

number of species in which the antennæ are 10-jointed. Two of these, viz., *E. sericeus*, Klug, and *E. humeralis*, Spin., are rather different in facies from the more typical species of *Epiphlœus*, and the emargination of the eyes is feebler and less removed from the antennæ. They approach somewhat closely a few of the species of *Ichnea*, and might either form with these a new genus or else be included in *Ichnea*.

Leconte and Horn, in referring to the latter genus, state that the pronotum is entirely continuous with the flanks of the prothorax, as in Clerinæ; but this can only be true of North American species which I have not seen. They say also that the eyes are emarginate on the inner side; this is the case with some species only, not the more typical ones, and the emargination is never much above the point where the antennæ are inserted.

Four other species of *Epiphlœus* having only ten joints in the antennæ are of a somewhat narrow elongated form, and would be better placed in the genus *Phyllobænus*; these are *E. capitatus*, Gorham, *E. nitidus*, Gorham, *E. erythrocephalus*, Gorham, and *E. punctatus*, Gorham.

Epiphlœus fasciatus, Klug (1842) = *E. chevolati*, Gorham (1877).

Epiphlœus velutinus, Gorham (1877) = *E. ruficeps*, Kuwert (1893).

Epiphlœus schenklingi, sp. n.

Yellowish brown, with the head, prothorax, and a broad transverse band behind the middle of the elytra blackish brown; clypeus, labrum, and mouth-parts, excepting the mandibles (which are quite black), testaceous, the antennæ, legs, and body beneath of a similar colour, but somewhat darker. Head densely, minutely punctulate, sparsely covered with pale setæ; face rather broad and flat; eyes distinctly emarginate rather high up on the inner side. Prothorax very densely, finely punctulate, subtuberculately rounded at the middle of each side. Elytra rounded at the apex, strongly and very closely punctured from the base up to the front margin of the dark transverse band, and thence to the apex less thickly and less strongly punctate; the area between the black band and the apex is divided into a yellowish-brown anterior, and a somewhat blackish, apical zone, the latter being so covered with yellowish pubescence as partly to obscure the colour of the derm; the anterior zone is crossed by two bands of yellowish pubescence.

Length 9, breadth $2\frac{1}{2}$ mm.

Hab. Rio Janeiro (*A. Fry*). One example only in Brit. Museum.

Plocamocera, Spin.—This genus is closely allied to *Epiphlœus*, and differs chiefly by its much more slender antennæ, which are covered with long bristle-like hairs. The antennæ are described by Schenkling as having eleven joints, but I cannot distinguish more than ten.

Ellipotoma, Spin.—In the type *E. tenuicornis*, Spin., of this genus, I have after some trouble been able to make out ten joints in the antennæ, which at first appeared to me to have only nine. The genus seems to be nearly related to *Phyllobœnus*, Spin., in which also the antennæ are ten-jointed. *Pyticeroides*, Kuw., a genus which I do not know, seems from the description to come near to, and possibly to be identical with, *Ellipotoma*.

I suggest later under *Apolopha* that two of the species placed by Gorham in that genus would be best placed in *Ellipotoma*, from which they differ little except in having only nine joints to the antennæ.

Phyllobœnus, Spin.—This genus, if my suggestion be adopted, will now include the following species :—

P. punctatus, Gorh. (*Epiphlœus*).
P. erythrocephalus, Gorh. (*Epiphlœus*).
P. capitatus, Gorh. (*Epiphlœus*).
P. nitidus, Gorh. (*Epiphlœus*).
P. dislocatus, Say.
P. merkeli, Horn.
P. linearis, Gorh. (*Apolopha*).

Apolopha, Spin. Mon. Clérides, i. p. 381 (1844).

Type, *A. reichei*, Spin. l. c. p. 383, pl. xxxvi. fig. 1.

This genus appears to me to have been quite wrongly identified by Gorham, who in this matter has been followed by Schenkling. Although I have seen no species that answers exactly to the description of *A. reichei*, I have not the least doubt that *Ichnea vitticollis*, Gorham, is congeneric, and indeed very closely related to it, possibly even only a variety. The fact that in Gorham's species the antennæ are 10-jointed, whereas Spinola described the antennæ in his species as having only eight joints, cannot be taken as an objection. In the figure of his species the antennæ are represented as having nine joints. Similarly in the case of *Pyticera* he has described the antennæ as 9-jointed, figured

them with ten joints, while in reality they have eleven. Spinola's statements as to the number of the antennal joints in species of this group are no more trustworthy than are some of those made by Mr Gorham himself. Mr. Gorham has placed in the genus *Apolopha* three Central American species—*trilineata*, Chev., *chiriquiana*, Gorh., and *linearis*, Gorh.; and his chief ground for doing so was, as he states, that the antennæ in these species have apparently only eight joints. There is, I admit, some difficulty in determining exactly the number of joints. In the first two of the species I make out nine joints, in the third ten joints in the antennæ. In all three the head in front is rather flat and without trace of a frontal costa, the presence of which is the chief characteristic of Spinola's genus. The first two species have very much the characters of *Ellipotoma*, and might very well go in that genus, while the third would be better placed in *Phyllobænus*.

The characters of *Apolopha*, as I interpret the genus, are as follows:—Head rather convex in front and having a frontal carina, anteclypeus membranous; labrum emarginate; last joint of labial and maxillary palpi flat, elongate, subtriangular; eyes rather finely facetted, deeply emarginate, with the antennæ placed under a short carina opposite the emargination; antennæ 10-jointed, the 5th and 7th joints not transversely produced. Acetabula of front coxæ closed behind by the prolongation inwards of the epimera to meet the prosternum. First joint of hind tarsi moderately long, rather narrow, the second and third joints with membranous lobe beneath.

To this genus the following species belong:—

A. reichei, Spin.
A. vitticollis, Gorh. (*Ichnea*).
A. nitida, Gorh. (*Ichnea*).
A. suturalis, Klug (*Enoplium*).
A. fryana, Gorh. (*Ichnea*).
A. fronticosta, Kuw. (*Ichnea*).

Pelonium, Spin.—This genus, as at present constituted, is not a homogeneous one, and may very well be divided up into at least three different genera, for one of which the name *Lasiodera*, proposed by Gray, may be adopted.

(1) Lasiodera (Gray), gen. nov.

Eyes finely facetted, deeply emarginate in front, widely separated from one another both above and below; acetabula

of front coxæ not closed in behind; femora rather stout, especially those of the front legs in the male; first tarsal joint visible from above, claws simple.

Type of the genus, *L. kirbyi*, Gray.

This genus will include also the following species now placed in *Pelonium*, and probably some others at present unknown to me:—

L. trifasciata, Cast.
L. rufipes, Klug.
L. ruficollis, Gorham.

(2) Pelonium.

If, as Gorham suggested, *P. pilosum*, Forst., be taken as the type, this genus can scarcely be separated from *Chariessa*, Newm. If, on the other hand, *P. lampyroides*, Spin., the first species mentioned and described by Spinola, be regarded as the type, as I think it should be, then *Pelonium* remains a distinct genus with characters as follows:—

Eyes large, coarsely facetted, emarginate in front, not widely separated above; acetabula of front coxæ open or sometimes closed behind, tarsal claws simple.

Here may be placed *P. lampyroides*, Spin., *optabile*, Gorh., *luridum*, Gorh., *lituratum*, Kirby, *placidum*, Schklg., and all other species now placed in the genus in which at the same time the eyes are coarsely facetted and the tarsal claws simple. These species are mostly those of larger size and more elongated form.

(3) Galeruclerus, gen. nov.

This genus is proposed to include all those species of *Pelonium* in which the eyes are coarsely facetted and the tarsal claws distinctly appendiculate at the base. These species are nearly all smaller than those of the genus *Pelonium* proper, with the elytra shorter in proportion and more widened and obtusely rounded behind. They have a great resemblance to Galerucidæ, and not a few of them are exact mimics of species of *Diabrotica*.

Pelonium sexnotatum, Klug, may be taken as the type of the genus. In this species, as in the majority, the antennæ are 10-jointed, in others they are 11-jointed.

The Group Corynetini.—I have no changes to suggest in the order of the genera of this group as they appear in Herr Schenkling's work. *Laricobius*, as is now generally

admitted, belongs to the family Derodontidæ, and must be removed from the group. On the other hand, the following genera, as I have earlier shown in this paper, must be admitted into the group, viz., *Tarsostenus*, Spin., *Tarsostenodes*, Blckb., and *Thanasimorpha*, Blckb.

Necrobioides, gen. nov.

Head short; anteclypeus membranous, labrum short, broad, arcuately emarginate in front; eyes finely facetted, emarginate in front; gula very narrow behind. Antennæ inserted under a carina opposite the emargination of the eye, eleven-jointed, the last three joints forming a somewhat compact club, 8th joint very short, but nearly as broad as the base of the 9th; 3rd to 7th joints short, subequal in length. Prothorax distinctly marginate at each side, marked above with a faint sinuately transverse depression at about one-fourth of its length from the apex. Elytra as in *Necrobia*, but having each a slight swelling on the disc near the base. Acetabula of front coxæ open behind. First joint of tarsi placed below the base of the second; fourth joint very small; claws bifid, the inner tooth shorter than the outer.

This genus is formed for a Mexican species, which in colour and form as well as in many points of structure very closely resembles the genus *Necrobia*. It differs, however, in the structure of its claws, the anterior depression on the the pronotum, and its very much smaller gular area.

Necrobioides mexicana, sp. n.

In colour and shape quite like some of the larger blue specimens of *Necrobia rufipes*, but with the legs and antennæ entirely black. Head thickly but not strongly punctured in front. Prothorax sparsely and feebly punctate. Elytra distinctly and very thickly punctured.

Length 6, breadth 2½ mm.

Hab. Mexico: Hacienda de la Imagen in Guerrero, 4000 ft. (*H. H. Smith*).

One specimen only in the British Museum. This specimen was sent amongst the *Necrobiæ* to Herr Schenkling, and was returned by him labelled *Necrobia* n. sp.; but although so very like a *Necrobia*, I consider that the difference in the structure of the claws, the size and shape of the gula, the presence of a depression anteriorly on the pronotum, and of a hump at the base of the elytra, justify me in regarding it as the type of a new genus.